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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,030	01/22/2004	Frank J. DiSanto	Copy-74	8008
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PLEVY & HOWARD, P.C. P.O. BOX 226 FORT WASHINGTON, PA 19034			EXAMINER HODGES, MATTHEW P	
			ART UNIT	PAPER NUMBER

2879

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/763,030

Applicant(s)

DISANTO ET AL.

Examiner

Matt P. Hodges

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 October 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/22/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

The drawings were received on 10/01/2004. These drawings are accepted for the purposes of examination.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the subject matter of claim 7, 8, and 10 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. Specifically it is unclear to the examiner where the applicant indicates and describes the use of a second conductive layer, a first grid, and a second grid together in one embodiment.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

Page 6, Paragraph 00024, "Figure 5" should be written to indicate that there are in fact two figures. A suggested change would be "Figures 5a and 5b".

Figures 11 and 12 are included in the drawings, but not indicated on the Brief Description of the Drawings. Further the figures are not described in any detail in the specification.

Page 15, Paragraph 00061, There is no "second grid 155" indicated in the figure as disclosed by the specification.

Page 15, Paragraph 00062, There are no "nanotubes 610", "filament 805", or "second grid 810, which ... is located between grid 150 and anode 106" indicated in the figure as disclosed by the specification.

Page 15, Paragraph 00063, There are no "nanotubes 610" or "filament 805" indicated in the figure as disclosed by the specification.

Page 15, Paragraph 00064, There is no "conductive layer 1010" indicated in the figure as disclosed by the specification.

The specification contains numerous errors in addition to those listed here that should be corrected.

Appropriate correction is required.

Claim Objections

Claims 1, 10, and 13 are objected to because of the following informalities:

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Regarding claim 1, claim 1 includes the recitation "a phosphor layer associated with each of said pads" however no antecedent basis for the term "pads" exists in the claim. It is assumed for the purposes of examination that the applicant intended to use the word "areas" instead of "pads".

Regarding claim 10, claim 10 is identical in scope to claim 8 and should be amended or cancelled. It is assumed for the purposes of examination that the applicant intended for claim 10 to depend upon claim 9 and not claim 7.

Regarding claim 13, claim 13 is objected to for the same reasons as cited in the objected to claim 1 above.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 5, 9-12, 14, 16, 19, 21-27, 29, 32, 33, 35, and 38-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Troxell. (US 5,541,478).

Regarding claims 1, 11, 25, and 43, Troxell discloses (see figures 5 and 8) a flat panel display including a first surface containing an anode, column (50) and row (48) electrodes, a plurality of conductive areas (78), a phosphor layer (76) formed at the conductive area, a TFT circuit, and a cold cathode (42). (Column 5 lines 13-27). Troxell further discloses the use of a

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two-transistor circuit and inherent line capacitance. (See incorporated references). Further, Troxell discloses the alternative use of various cold cathodes including, filaments, field emission arrays, and Spindt cathodes. Field emission arrays inherently include an emitter layer on a conductive layer formed on an opposite substrate. (Column 1 lines 44-53).

Regarding claims 2, 27, and 38, Troxell further discloses the use of a grid (64) formed between the anode and cathode. The grid is kept at a potential between the anode and cathode potentials. (Column 5 lines 40-46).

Regarding claims 4, 5, 9, 10, 29, 32, and 33, Troxell alternatively discloses the use of a wire mesh grid (or second conductive layer isolated from the emitter material). The wire mesh grid is located between the filament and anode and is operated at a potential between the two. Further, the first grid disclosed above, is located between the wire mesh grid and the anode and is kept at a potential between the two.

Regarding claims 12 and 39, Troxell alternatively discloses the use of either a silicon substrate or glass substrate for the first surface. (Column 6 lines 30-35).

Regarding claims 14, 19, 40, and 41, the device as disclosed emits light through the top cathode surface of the flat panel display device when the bottom surface is opaque.

Regarding claims 16, 35, and 42, the use of a filament cathode implies the distribution of emitter materials throughout the cathode and electrons are necessarily emitted from an edge of the emitter material.

Regarding claim 21, the first and second substrates are separated by insulating spacers of glass side walls.

Regarding claim 22, the device is operated in a vacuum. (See abstract).

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Regarding claims 23 and 24, the phosphors emit light in the red, green, and blue ranges.

(See figure 1).

Regarding claim 26, the first and second inputs of both devices are connected to row and column lines respectively. Further the predetermined voltage is passed from one of the inputs for both the first and second device and passed to the conductive area. (See incorporated reference).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 20 and 34 are rejected under 35 U.S.C. 103(a) as being obvious over Troxell (US 5,541,478).

Regarding claims 20 and 34, Troxell discloses the device as claimed (see rejections of claims 1 and 27 above) but does not appear to specify the specific voltage used for the conductive areas. However Troxell does disclose the use of a low voltage anode over the use of a high voltage device. The low voltage anodes run in 10s of volts compared to high voltage anodes run in the kV range. (Column 5 lines 40-46). Further the specific voltage passed to the conductive areas would necessarily be adjusted according to the emitter material, location from the emitter, and dimensions of the pixel elements. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Thus It would have been obvious to one having ordinary

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skill in the art at the time the invention was made to provide voltages inside the claimed range for a specific embodiment, since optimization of workable ranges is considered within the skill of the art and the claimed ranges are consistent with the overall use of the device as disclosed.

Claims 1, 2, 4, 5, 9-14, 16, 19, 21-27, 29, 32, 33, 35, and 38-43 are rejected under 35 U.S.C. 102(b) as anticipated by Troxell (US 5,541,478) or, in the alternative, under 35 U.S.C. 103(a) as obvious over Troxell (US 5,541,478) in view of Troxell. (US 5,177,406).

It is noted that Troxell ('478) discloses all elements of the claim including a capacitor electrically connected between the two devices. However it is realized by the examiner that this capacitive effect is much less substantial than an alternatively constructed capacitively held switch. Thus considering a greater capacitance more in agreement with disclosure of the applicant, a second rejection is made below to more closely address this relationship.

Regarding claims 1, Troxell ('478) discloses the device as claimed (see rejection of claim 1 above) but does not appear to specify the use of a capacitively held TFT. However Troxell ('406), in the same field of endeavor, discloses (see figures 3 and 4) the use of an active matrix anode substrate including a capacitively held TFT. The first device (30) includes a first and second input on row and column lines (26 and 28), while the second device is connected to the output of the first device and a capacitor (32) that holds the second device in an open state for a predetermined period of time. The second device passes a predetermined voltage to the conductive area. The use of a capacitively held TFT advantageously increases device brightness while allowing for lower control voltages. (Column 2 lines 5-25). Thus, it would have been

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obvious at the time the invention was made to a person having ordinary skills in the art to incorporate a capacitively held TFT as taught by Troxell ('406) into the device as disclosed by Troxell ('478) in order to advantageously increase device brightness while allowing for lower control voltages.

Claims 2, 4, 5, 9-12, 14, 16, 19, 21-27, 29, 32, 33, 35, and 38-43 are rejected for the reasons cited in the rejection under Troxell (US 5,541,478).

Regarding claim 13, Troxell ('478) in view of Troxell ('406) discloses the device as claimed but does not appear to specify the use of transparent conductive areas. However Troxell ('406) discloses the use of conductive areas that are mixtures of phosphor material and ITO. (Column 10 lines 13-20). The use of a phosphor and conductive material for the conductive areas advantageously simplifies manufacture by reducing the number of layers. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the use of transparent conductive areas as taught by Troxell ('406) into the device as disclosed by Troxell ('478) in view of Troxell ('406) in order to advantageously simplify manufacture by reducing the number of layers.

Claims 1-13, 15, 17, 18, 21-33, 36-39, and 43 are rejected under 35 U.S.C. 103(a) as being obvious over Oh (US 2004/0222734) in view of Troxell (US 5,177,406).

Regarding claim 1, 2, 4-6, 11, 25-27, 29-31, 38, and 43, Oh discloses (see figure 6) a flat panel device including a first surface with an anode and phosphor layer, a second surface (2) including a conductive layer (10), emitter material (12), a second conductive layer (6) formed over the first conductive layer and electrically isolated from the first layer, and a grid electrode

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formed between second conductive layer and the anode. (Paragraph 0053). The voltages of the layers increase from the direction of the cathode to the anode, further the potential difference between the cathode and the gate electrodes is above the threshold voltage of the emitter, while the voltage of the grid electrode is less than the threshold electrode. (Paragraph 0045). Oh does not appear to specify the use of thin film transistors on the anode surface, however Troxell ('406), in the same field of endeavor, discloses (see figures 3 and 4) the use of an active matrix anode substrate including a capacitively held TFT. The first device (30) includes a first and second input on row and column lines (26 and 28), while the second device is connected to the output of the first device and a capacitor (32) that holds the second device in an open state for a predetermined period of time. The second device passes a predetermined voltage to the conductive area. The use of a capacitively held TFT advantageously increases device brightness while allowing for lower control voltages. (Column 2 lines 5-25). Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate a capacitively held TFT as taught by Troxell ('406) into the device as disclosed by Oh in order to advantageously increase device brightness while allowing for lower control voltages.

Regarding claims 3, 9, 10, 28, 32, and 33, the second conductive layer can alternatively be considered the first grid and the grid disclosed above can be considered the second grid.

Regarding claims 12, 13, and 39, the first surface and the electrodes on the first surface are optically transparent.

Regarding claims 17, 18, 36, and 37, Oh further discloses the use of nanotubes and alpha carbon for the emitter material. (Paragraph 0019).

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Regarding claims 21 and 22, Oh further discloses the use of insulating spaces and an evacuated space for the display device. (Paragraphs 0013 and 0020)

Regarding claims 23 and 24, Oh further discloses the use of red, green, and blue phosphors on the anode substrate. (Paragraph 0033)

Regarding claims 7 and 8, Oh in view of Troxell ('406) discloses the device as claimed but does not appear to specify the use of a second grid in addition to the first grid and the second conductive layer, formed between the first grid and the anode and having a potential less than the first grid. However the applicant fails to identify the use of a second grid in addition to a first grid, when the first grid is not used as the gate electrode, to solve any problem or yield any unexpected result that is not within in the scope of the teachings relied upon. Further the teachings relied upon teach the use of grid electrodes to focus the electron beams and lower the potential between the anode and cathode substrates. The use of additional grids to perform the same task is considered well within the skill of one having ordinary skill in the art and thus is a matter of design choice. Thus it would have been an obvious design choice to one having ordinary skill in the art to use an additional grid between the first grid and the anode to control the potential difference between the first and second substrates as claimed by the applicant, since such a modification is disclosed in theory by the prior art and would have been within the skill of one skilled in the art.

Regarding claim 15, Oh in view of Troxell ('406) discloses the claimed invention but does not appear to specify the composition of the second substrate. However, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. Here the use of silicon for

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the opaque substrate would have been an obvious selection. Silicon wafers are well known in the art of display devices and advantageously allow for ease of manufacture including ease of layering through photolithography. Thus, it would have been obvious to one having ordinary skills in the art at the time the invention was made to have used a silicon substrate as the second surface, since the selection of known materials for a known purpose is within the skill of the art.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kinoshita et al. (US 5,736,814) disclose the use of an addressable anode substrate in a vacuum fluorescent display device.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt P Hodges whose telephone number is (571) 272-2454. The examiner can normally be reached on 7:30 AM to 4:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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**NIMESHKUMAR D. PATEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800**